BTEC Assignment Brief

Qualification	Pearson BTEC International Level 3 National Diploma in Civil Engineering Pearson BTEC International Level 3 National Extended Diploma in Civil Engineering
Unit number and title	Unit 31: Specialist Civil Engineering Techniques
Learning aim(s) (For NQF only)	B: Examine the principles of tunnelling
Assignment title	Principles of tunnelling
Assessor	
Issue date	
Hand in deadline	

Vocational Scenario or Context	You have been employed as a trainee Civil Engineer in the design office of a large Civil Engineering Design Consultancy practice who specialise in the design of civil engineering infrastructure projects. A coastal local authority has approached your company to provide the design and offer advice for the civil engineering infrastructure to support the building of a new 14-kilometre section of relief road linked to a congested road network. The initial route of the road includes sections following the coastline to avoid a local town. This section of the coast has suffered from coastal erosion over the last 20 years. The initial route then turns eastward and must navigate its way across a local mountainous section before emerging into a 20-metre-deep valley crossing a river. The coastal section and tunnelling are phase two of the project. The new section of road terminates at an existing roundabout of a busy road. The local authority's vison for the key civil engineering infrastructure is to sell the area as a tourist destination with modern iconic elements which complement their location. Around 80% of the initial proposed route will pass through a National Park.
Task 1	With regards to the project in the scenario, you have been given the task of investigating the most appropriate way of providing a four-lane carriageway along the coastline and a 3-kilometre tunnel east of the coast. The first aspect of infrastructure for phase 2 to be designed and constructed is the tunnel. Your chief engineer has asked you to write a report that evaluates the different approaches that can be used to construct the new tunnel. Within your evaluation you should discuss any alternatives that are available for the tunnel. Included in your report should be an explanation of the

	methods that can be used to construct the tunnel and the impact of the ground conditions on the design.
Checklist of evidence required	A well referenced report with images and drawings, inclusive of clear conclusions, relating to alternative approaches that could be used to construct the tunnel for the given scenario. This should be a word-processed document with appropriate formatting and page numbers, and a legible font.

Criteria covered by this task:	
Unit/Criteria reference	To achieve the criteria you must show that you are able to:
31/B.D2	Evaluate the different approaches that can be taken to construct a tunnel for a given situation.
31/B.M3	Discuss the suitability of alternative types of tunnel for a given situation.
31/B.P5	Explain the impact of ground conditions on the design of tunnels.
31/B.P4	Explain the methods that can be used to construct tunnels.

Sources of information to support you with this Assignment	Frank Harris–Modern Construction & Ground Engineering Equipment & Methods, 2nd edition, (Prentice Hall, 1995) ISBN 9780 5822 36578 Roy Holmes- Introduction to Civil Engineering Construction, 3rd Edition (College of Estate Management, 1995) ISBN 9781 8997 69308 www.ice.org.uk https://www.britishtunnelling.org.uk
Other assessment materials attached to this Assignment Brief	*Case studies* Trade Literature

Pearson
BTEC